Test: $\sum_{k=3}^{7} 5\left(\frac{-1}{2}\right)^{k-1}$ $\sum_{k=3}^{13} 5(-2)^{k-1}$

#3/

$k=3$

$5\left(\frac{-1}{2}\right)^2$

$= \frac{5}{4}$

#7/

$k=3$ $5(-2)^2$, $k=4$ $5(-2)^3$

$20 + -40$

$\times -2$

$S_{11} = \frac{20((-2)^{11}-1)}{(-2)-1}$

$= 13660$

#8/ $A = P(1+i)^n$ ← compound interest

$= 600\left(1+\frac{0.07}{4}\right)^{36}$

-1200

10/ $48000 + 46800 + \cdots + 0$

$t_n = a + (n-1)d$

$0 = 48000 + (n-1)(-1200)$

$n = 41$

$S_{41} = \frac{41}{2}(2(48000) + (40)(-1200))$

984000

// $t_3 = -5t_1 + 2(3 - t_2)$

$= -5(-3) + 2(3 - 2)$

$= 17$

$t_4 = -36$

$t_5 = -3$

2. a) 122010

b) 0.252

$S_9 = \dfrac{\frac{2}{5}\left(\left(-\frac{4}{5}\right)^9 - 1\right)}{-\frac{4}{5} - 1}$

3. (i) $r = \frac{1}{4}$ $|r| < 1$ converges

$S = \dfrac{a}{1 - r}$

$= \dfrac{12}{1 - \frac{1}{4}}$

$= 16$

(ii) $r = -0.6$

$S = -25$

b) $\frac{131072}{1953125} = \left(\frac{2}{5}\right)\left(-\frac{4}{5}\right)^{n-1}$

$\frac{655360}{3906250} = \left(-\frac{4}{5}\right)^{n-1}$

$\log\left(\quad\right) = (n-1)\log\left(\frac{4}{5}\right)$

$n = 9$

$S_9 = \dfrac{\frac{2}{5}\left(1-\left(-\frac{4}{5}\right)^9\right)}{1-\left(-\frac{4}{5}\right)}$

$S_9 = 0.252\ldots$

4. -3237.5 $\quad 8, 10, 12, \ldots, 44$

$44 = 8 + (n-1)(2)$

$n = 19$

5. #222 300

$t_n = ar^{n-1}$

6. $t_2 + t_3 = -24$ $\quad t_7 + t_8 = -5832$

$ar^1 + ar^2 = -24$ $\quad ar^6 + ar^7 = -5832$

$$\frac{ar^6 + ar^7}{ar + ar^2} = \frac{-5832}{-24}$$

$$\frac{ar^6(1+r)}{ar(1+r)} = 243$$

$$\sqrt[5]{r^5} = \sqrt[5]{243}$$

$r = 3$

$a(3) + a(3)^2 = -24$

$12a = -24$

$a = -2$

$$S_{12} = \frac{-2(3^{12} - 1)}{3 - 1}$$

$= -531440$

Long Division:

$$
\begin{array}{r}
3x^3-11x^2+33x-98 \\
x+3\overline{)\,3x^4-2x^3+x-10} \\
\underline{3x^4+9x^3} \\
-11x^3+x \\
\underline{-11x^3-33x^2} \\
33x^2+x \\
\underline{33x^2+99x} \\
-98x-10 \\
\underline{-98x-294} \\
R=284
\end{array}
\qquad +0x^2
$$

$$(x+3)(3x^3-11x^2+33x-98)+284=?$$

$$3x^4-11x^3+33x^2-98x+9x^3-33x^2+99x-294+284$$

$$3x^4-2x^3+x-10$$

Divide: $(7x^4 - x + x^5 - 2x^3) \div (x+3)$

$$
\begin{array}{r}
x^4 + 4x^3 - 14x^2 + 42x - 127 \\
x+3 \overline{)\, x^5 + 7x^4 - 2x^3 - 0x^2 - x + 0} \\
\underline{x^5 + 3x^4} \\
4x^4 - 2x^3 \\
\underline{4x^4 + 12x^3} \\
-14x^3 + 0x^2 \\
\underline{-14x^3 - 42x^2} \\
42x^2 - x \\
\underline{42x^2 + 126x} \\
-127x + 0 \\
\underline{-127x - 381} \\
R = 381
\end{array}
$$